

PLANT PROTEIN KINASES
 Inventor: Steven C. Allen et al
 Application No. 10/44,731
 Docket No. BB1171 USDIV



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APPROVED	O. G. FIG.	—
BY	CLASS	SUBCLAS
DRAFTSMAN	800	295

420
 361 SPKLRSTAALVHPPF-FDELRDPNTRLPNGRFLPPLFNFKPHEILKNVPADFMVKLVPEH
 SEQ ID NO: 10
 SEQ ID NO: 12
 SEQ ID NO: 14 SPNLRCTVLDAFDPLDEFRDPNPRLPNGPIXPTTINSNP---
 SEQ ID NO: 16 SPNLRCTAIDACAHSS-FDELRREPNAARLPGNRPFPPLFNFKP-ELIANASPELIINRLVPEH
 SEQ ID NO: 16 SPNLRSAAALDTLVHPF-FDELRDPNARLPGNRELPPAFHFKPHEILKGVPLEMVAKLVPEH
 SEQ ID NO: 21 SPNLRSSTAALVHPPF-YDDVDRDPNTRLPNGRFLPPLFNFKVNEILKGVPAAEMLVVKLVPPH
 SEQ ID NO: 22 SPNLRCQALDCLTHPF-FDELRDPNARLPTGRELPPLFNFKPHEILKGVPVETLMKLVPEH
 SEQ ID NO: 23 SPNLRCSTAALVHPPF-FDELRDPNARLPTGRELPPLFNFKPHEILKGVPVETLMKLVPEH
 SEQ ID NO: 24 SPSLRCTSTAALVHPPF-FNELREPNAARLPGNRPPLFNFQ-ELGGASMELINRLIPEH

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 SEQ ID NO: 10 ARKQCAF---VGW-
 SEQ ID NO: 12 ---
 SEQ ID NO: 14 ---
 SEQ ID NO: 16 VRRQNGPNEAHAGS
 SEQ ID NO: 21 ARKQCPW---LGL-
 SEQ ID NO: 22 ARKQCAL---FGSS
 SEQ ID NO: 23 ARKQCPF---LGL-
 SEQ ID NO: 24 VRQMSTGLQN--S

FIG. 2C



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SEQ ID NO: 10 M-----ASVGVARSSLGFQN--GTSSSSDPDRILPNELGSMSIRDDKDVE
 SEQ ID NO: 12 M-----GSVXVAPSGLNNSSXTSMGA----EKLPDQMHDLKIRDDKEXE
 SEQ ID NO: 14 MVFEQQQLKEKRDSSAKMTSVGVAPTS-GIREASGHGAAGVDR-LPEEMNDMCKIRDDREME
 SEQ ID NO: 16 M-----E-----HPAPAEPMLIDEQPPAVACE-----KKQQDGGE
 SEQ ID NO: 21 M-----ASVGIAFPNP-GARD-----STGVDK-LPEEMNDMCKIRDDKEME
 SEQ ID NO: 22 M-----MASGGVAPAS-GRIDK-NASSVGVEK-LPEEMNDMCKIRDDKEME
 SEQ ID NO: 23 M-----ASVGVARAPS-GFREVLDGGEIGVDDILPEEMSMDMKIRDDREME
 SEQ ID NO: 24 M-----ASLPLGPQPHALAPPLQLHDGDALKRPE-----LDSDKEMS

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SEQ ID NO: 10 D-IVVNNGAEPGHITVTSIDGRNGQAKQTISYMAERVVGHGSFGTVFQAKCLETGETVA
 SEQ ID NO: 12 XXTIINXXGTEXGHITVTTTGGXNGXPKXTVSYMAXRIVGQCGSEFGIVFQAKFWRQGETVA
 SEQ ID NO: 14 A-TVVDGNGETGHITVTTIGGRNQPKQTISYMAERVVGHGSFGVVFQAKCLETGETVA
 SEQ ID NO: 16 AP-YAEGNDAMTGHIIISTTIGGKNGEPKQTISYMAERVVGTGSFGIVFQAKCLETGETGEMVG
 SEQ ID NO: 21 A-TVVDGNGETGHIIIVTTIGGRNQPKQTISYMAERVVGHGSFGVVFQAKCLETGETVA
 SEQ ID NO: 22 AATIVDGNGETGHIIIVTTIGGRNQPKQTISYMAERVVGHGSFGVVFQAKCLETGETVA
 SEQ ID NO: 23 A-TVVDGNGETGHIIIVTTIGGRNQPKQTISYMAERVVGHGSFGVVFQAKCLETGETVA
 SEQ ID NO: 24 AA-VIEGNDAVTGHIISTTIGGRNGETGHIIIVTTIGGRNQPKQTISYMAERVVGHGSFGIVFQAKCLETGESVA

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SEQ ID NO: 10 IKKVLDKRYKNRELQTMVRVLDHPNVVALKHCFSSKTEKEELYLNLVLEYVPETAHRVIK
 SEQ ID NO: 12 IKXVL-----
 SEQ ID NO: 14 IKKVLDKRYKNRELQTMRLLDHPNVVALKHCFSSITEKDELYLNLVLEYVPETVNRIVK
 SEQ ID NO: 16 IKKVLDKRYKNRELQTMRSMIHSNVVSLKHCFSSITSRDELLFLNLVMEYVVPETLYRVLK
 SEQ ID NO: 21 IKKVLDKRYKNRELQTMRLLDHPNVVSLKHCFSSITEKDELYLNLVLEYVPETVHRVIK
 SEQ ID NO: 22 IKKVLDKRYKNRELQTMRLLDHPNVVSLKHCFSSITEKDELYLNLVLEYVPETVSRVIR
 SEQ ID NO: 23 IKKVLDKRYKNRELQTMRLLDHPNVVSLKHCFSSITSRDELLFLNLVMEYVVPETVHRVIK
 SEQ ID NO: 24 IKKVLDKRYKNRELQLMRPMDDHPNVISLKHCFSSITSRDELLFLNLVMEYVVPETLYRVLR

FIG. 2A

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PLANT PROTEIN KINASES
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Application No. 10/434,731
Pocket No. BB1111 USDIV

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SEQ	ID	NO: 10	HYNKMNQRMPLIYAKLYMYSQICRALAYIHNNSIGVCHRDIKPQNLLVNPHTHQLKLCDFGS
SEQ	ID	NO: 12	
SEQ	ID	NO: 14	HYNKENQRMPLIYVKLYTYQIFRALSYIHRCTIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 16	HYSNANQGMPLIYVKLYMYQLFRGLAYVHTVPGVCHRDVKPQNVLVDPPLTHQVVKICDFGS
SEQ	ID	NO: 21	HYNKLNQRMPLIYVKLYTYQIFRALSYIHRCTIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 22	HYNKMNQRMPLIYVKLYSYQICRALAYIHNNSIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 23	HYSKLNQRMPLIYVKLYTYQIFRALSYIHRCTIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 24	HYTSSNQRMPIFYVKLYTYQIFRGLAYIHTVPGVCHRDVKPQNLLVDPPLTHQVVKLCDFGS

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SEQ	ID	NO: 10	AKVLVKGEPNISYICSRRYYRAPELIFGATEYTTAIDVGSAGCVLAELLLGQPLFPGESGV
SEQ	ID	NO: 12	
SEQ	ID	NO: 14	AKVLVKGEPNISYICSRRYYRAPELIFGATEYTTAIDVWSVGCVLAELLLGQPLFPGESGV
SEQ	ID	NO: 16	AKVLVPGEPNIAVYICSRRYYRAPELIFGATEYTTAIDIWSAGCVLAELLLGQPLFPGETAV
SEQ	ID	NO: 21	AKVLVKGEPNISYICSRRYYRAPELIFGATEYTTAIDVWSAGCVLAELLLGQPLFPGESGV
SEQ	ID	NO: 22	AKVLVKGEPNISYICSRRYYRAPELIFGATEYTTAIDIWSAGCVLGEELLLGQPLFPGESGV
SEQ	ID	NO: 23	AKVLVKGEPNISYICSRRYYRAPELIFGATEYTTAIDVWSVGCVLAELLLGQPLFPGERGV
SEQ	ID	NO: 24	AKVLVKGEPNISYICSRRYYRAPELIFGATEYTTAIDIWSAGCVLAELLLGQPLFPGENSV

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SEQ	ID	NO: 10	HYNKMNQRMPLIYAKLYMYSQICRALAYIHNNSIGVCHRDIKPQNLLVNPHTHQLKLCDFGS
SEQ	ID	NO: 12	
SEQ	ID	NO: 14	HYNKENQRMPLIYVKLYTYQIFRALSYIHRCTIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 16	HYSNANQGMPLIYVKLYMYQLFRGLAYVHTVPGVCHRDVKPQNVLVDPPLTHQVVKICDFGS
SEQ	ID	NO: 21	HYNKLNQRMPLIYVKLYTYQIFRALSYIHRCTIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 22	HYNKMNQRMPLIYVKLYSYQICRALAYIHNNSIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 23	HYSKLNQRMPLIYVKLYTYQIFRALSYIHRCTIGVCHRDIKPQNLLVNPHTHQVVKLCDFGS
SEQ	ID	NO: 24	HYTSSNQRMPIFYVKLYTYQIFRGLAYIHTVPGVCHRDVKPQNLLVDPPLTHQVVKLCDFGS

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SEQ	ID	NO: 10	DQLVEIIKVVLGTPPTREEIKCMNNPNTYEFKFQIKAHPWHKIFHKRMPAEAVDLVSRLLQY
SEQ	ID	NO: 12	
SEQ	ID	NO: 14	DQLVEIIKVVLGTPPTREEIKCMNNPNTYEFRFQIKAHPWHKIFHKRMPAEADLASRLLQY
SEQ	ID	NO: 16	DQLVEIIKVVLGTPPTREEIKCMNNPNTYEFKFQIKAHPWHKIFHKRMPAEADLASRLLQY
SEQ	ID	NO: 21	DQLVHIIKVVLGTPPTREEIKCMNNPNTYEFKFQIKAHPWHKIFHKRMPAEAVDLVSRLLQY
SEQ	ID	NO: 22	DQLVEIIKVVLGTPPTREEIKCMNNPNTYEFKFQIKAHPWHKIFHKRMPAEAVDLVSRLLQY
SEQ	ID	NO: 23	DQLVEIIKVVLGTPPTREEIKCMNNPNTYEFKFQIKAHPWHKIFHKRMPAEAVDLVSRLLQY
SEQ	ID	NO: 24	DQLVEIIKVVLGTPPTREEIKCMNNPNTYEFRFQIKAHPWHKIFHKRMPAEADLASRLLQY

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FIG. 2B



PLANT PROTEIN KINASES
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Application No. 09/704,731
Docket No. BB117 USDIV

APPROVED	O.G. FIG.	—
BY DRAFTSMAN	CLASS 800	SUBCLASS 295

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SEQ ID NO: 2 LKRRTENLKD KYSLGRRRLQGGQFGTTYLCVERAT-----GKEFACKSILKX-LVTDDDV
 SEQ ID NO: 4 FGF-SKNFGAKYELGKEVGRGHFG--HTCSAVVKGEYKGQTAVVKIIAKAKMTTAISIE
 SEQ ID NO: 6 FGF-AKQFSAHYELSDEXGRGHFG--YTCSAKGKKGAFKGGLNVAVKVIPKAKMTTAIAIE
 SEQ ID NO: 8 -----
 SEQ ID NO: 17 LRRKTENLKD KYSLGRRRLQGGQFGTTTHLCVERAT-----GKELACKSISLKRKLGSDDDV
 SEQ ID NO: 18 FGF-AKNFGAKYDLGKEVGRGHFG--HTCSAVVKGEHKGHTAVVKIISKAKMTTAISIE
 SEQ ID NO: 19 FGF-SKQFASHYEIDGEVGRGHFG--YTCSAKGKKGSLKGQEVAVKVIPKSMTTAAIE

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SEQ ID NO: 2 DVREIQIMHHLAGHPNVISIRGAYEADAVAV-----
 SEQ ID NO: 4 DVREVKILRALSGHNNLVKFYDACE DGLNVYIVMELCEGGELLDRILLARGRYTEEDAK
 SEQ ID NO: 6 DVREVKILRALTGHNVLQFYEAYEDD-----
 SEQ ID NO: 8 -----
 SEQ ID NO: 17 DVREIQIMHHLAGHPSVVGIRGAYEADAVAVHLYVMELCEGGELFDRIVRGG-HYTERKAA
 SEQ ID NO: 18 DVREVKILKALSGHDNLVRFYDACE DALNVYIVMELCEGGELLDRILLARGRYTEEDAK
 SEQ ID NO: 19 DVSRREVKMLRALTGHNVLVQFYDAFEDDENVYIVMELCKGGELLDKILQRGGKYSEDDAK

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SEQ ID NO: 2 -----
 SEQ ID NO: 4 AIVVQILSVVAFCHLQGVVHRDLKPENFLFTTRDENAPMMLIDFGLSDFIRPDERLNDIV
 SEQ ID NO: 6 -----
 SEQ ID NO: 8 VVMLQILSVVSFCHQGVVHRDLKPENFLFSSKEENSPLKVIDFGLSDFVKPDERLNDIV
 SEQ ID NO: 17 ELARVIVGVVEACHSMGVHMRLDKPENFLFADHSEEAAALKTIIDFGLSIFFRPQQIFTDV
 SEQ ID NO: 18 AIVVQILSVVAFCHLQGVVHRDLKPENFLFTTRDESAPMMLIDFGLSDFIRPDERLNDIV
 SEQ ID NO: 19 KVMVQILSVVAVCHLQGVVHRDLKPENFLFSTKDETSPLKAIDFGLSDYVKPDERLNDIV

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FIG. 1B

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SEQ ID NO: 2 GSAYYYVAPEVLHRSYSMEDIWSIGVITYILLCGSRPFWARTESGIRSVLRADPNFDD
 SEQ ID NO: 4 GSAYYYVAPEVLHRSYGTGEGDMXSIGVIAYILL--
 SEQ ID NO: 6 --
 SEQ ID NO: 8 --
 SEQ ID NO: 10 GSPPYYVAPEVLKRYGPEADVWWSAGVIIYILLCGVPPFWAENEQGIFEEVHLGRLLDFESE
 SEQ ID NO: 17 GSAYYYVAPEVLHRSYSMEDIWSIGVITYILLCGSRPFWARTESGIRSVLRADPNFDD
 SEQ ID NO: 18 GSAYYYVAPEVLHRTYGETADMWSIGVIAYILLCGSRPFWARTESGIRFRAVLKAEPNFEAA
 SEQ ID NO: 19

420

SEQ ID NO: 2 PWPTVSAEAKDFVKRFLNKDYRKRMATAVQUALTHPWLR-DEQR-QIPLDILIFRLIKQYLR
 SEQ ID NO: 4 --
 SEQ ID NO: 6 --
 SEQ ID NO: 8 --
 SEQ ID NO: 10 PWPSISDGAKDLVRMILVRDPRKRKRLTAHEVLRHPWVQVGGVAPDRPLDSAVLSRMKQFSA
 SEQ ID NO: 12 PWPSVSAEAKDFVKRFLNKDYRKRMATAVQUALTHPWLR-DEQR-QIPLDILIFRLVKQYLR
 SEQ ID NO: 14 PWPSLSPAEAVDFVKRFLINKDYRKRLTAAQALCHPWLW-GSHELKIPSDMIIYKLVKVYIM
 SEQ ID NO: 16

480

SEQ ID NO: 2 ATPLKRLALKALSKALREDELLYKLQFKLLEP-RDGFVSLDNFERTALTRYLT DAMKESR
 SEQ ID NO: 4 --
 SEQ ID NO: 6 --
 SEQ ID NO: 8 --
 SEQ ID NO: 10 MNKLKKMALARVIAENLSEDEIAGLREMFKMIDADNSQQTIEELKVGLEKVGAN-LQESE
 SEQ ID NO: 12 ATPLKRLALKALSKALSEDELLYLRLQFKLLEP-RDGFVSLDNFERTALTRYST DAMRESR
 SEQ ID NO: 14 STSLRKSALAAALAKTITVQPLAYLREQFTLLGPSKNGYISMQNYKTAILKSSTDAMKDSR
 SEQ ID NO: 16

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FIG. 1C

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SEQ ID NO: 2 VLEFLHCALEPLAYRRMDFEEFCAAAISPYQLEALERWEEIAGTAFQQFEQEGNRVISVEE
 SEQ ID NO: 4
 SEQ ID NO: 6
 SEQ ID NO: 8
 SEQ ID NO: 17 IYALMQAADVDDNNGTIDYGEFIATL---HLNKVER--EDHLFAAFQYFDKDGSGYITADE
 SEQ ID NO: 18 VLEFQHCALEPLAYRKMDFEEFCAAAISPYQLEALERWEEIAGTAFQHFQEGRNVRVISVEE
 SEQ ID NO: 19 VFDFVHMISCLQYKKLDFFECASALSVYQLEAMETWEQHARRYELFEKDGPNRPIMIE

601

SEQ ID NO: 2 LA---QELNLAPTH--YSIVQDWIRKSDGKLNFLGETKELHGVТИGSNTRR--
 SEQ ID NO: 4
 SEQ ID NO: 6
 SEQ ID NO: 8 LQVACEEFFGLGDVQ-LEDLIGEVQDQDNDGRIDYNEFVAMMQKPTVGGSRRPICRTASAS
 SEQ ID NO: 17 LA---QELNLAPTH--YSIVQDWIRKSDGKLNFLGETKELHGVТИGSNTRR--
 SEQ ID NO: 18 LA---SELGLGPSPVPVHVVLQDWIRHSKGSLFLGFVRLLHGVSSR--TLQR--
 SEQ ID NO: 19

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SEQ ID NO: 2
 SEQ ID NO: 4 H
 SEQ ID NO: 6 D
 SEQ ID NO: 8
 SEQ ID NO: 17 GSASGGRRSGWPRPLCILWLPCCLRGVDD
 SEQ ID NO: 18 H
 SEQ ID NO: 19 A

FIG. 1D



PLANT PROTEIN KINASES
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Application No. 09/854,731
Docket No. BB1171 USDIV

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SEQ ID NO: 2 MGQ-CYGKGASGRITADDEGGVVTEHQSPPPANGLPSTPPRQQAQACQVGTPRRRGSKS
SEQ ID NO: 4
SEQ ID NO: 6
SEQ ID NO: 8
SEQ ID NO: 17 MGNTCVGPSITMNGFFQSVSTAL-WKTPQEGDALPAANGPGGPAGA-----GSQS
SEQ ID NO: 18 MGQ-CYKGKARGASSRAD-----HDADPSGAG-SVAPPSPPLPANGAQLPATPRRH--KS
SEQ ID NO: 19 MGI-CHGKPVEQQSKS-----LPVSGTNEAPTNSQPPAK-----

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SEQ ID NO: 2 GSTTPGHQ-----TPGVA-WPSPYPSGGASPLPAGVSPSPA-----RSTPRRFKRPFP
SEQ ID NO: 4 NPSXLPSWEKNSPSSNSNPSSXPLXIFKXPFP
SEQ ID NO: 6
SEQ ID NO: 8 ALPKPASDVHHVAVQSEAPEVKIAAYHSEPAVRSPEPVKIAASHSE-----PA
SEQ ID NO: 17 GSTTPVHH-HQAATPGAAAWPSPYPAGGASPLPAGVSPSPA-----RSTPRRFKRPFP
SEQ ID NO: 18
SEQ ID NO: 19 -----SSGFPFYSPSPVPVSLEFKSSPSVSSSVSSPLRIFKRPFP

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SEQ ID NO: 2 -----PPVKRVSSAGLLVGSV
SEQ ID NO: 4 PSPAKHIKATLAKRLGGGKPKEGTIPEEGVGAGGGG-----GAADGAETERPLDKT
SEQ ID NO: 6 PSPAKHIRALLARXHGSVKPNEASIPE-----ASXCELGLDKS
SEQ ID NO: 8
SEQ ID NO: 17 PMAAKP-----GAAAANASPPSPSPRPRPQVKRVSSAGLLGSV
SEQ ID NO: 18 PSPAKHIKATLAKRLGGGKPKEGTIPEEGGAGAGAGAGAAVGAAADS
SEQ ID NO: 19 PSPAKHIRAFLARRYGSVKPNEVSIE-----GKECEIGLDKS

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FIG. 1A